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METHOD FOR PRODUCING ORGANIC FERTILIZER FROM FARMED-POULTRY MANURE
AND A DEVICE THEREOF
[Kakshakakin fun no shoriniyori yukishitsu hiryo wo seisansuru hoho
narabini sono sochi]

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1. Title of Invention

Method for Producing Organic Fertilizer from Farmed-Poultry
Manure and a Device Thereof

2. Claim(s)

[Claim 1] A method for producing organic fertilizer from farmed-poultry manure, comprising a step of adding calcium carbonate into a raw material of poultry manure for an amount based on the weight ratio to the manure raw material under stirring, a step of adding zeolite to this mixture for an amount based on the weight ratio to the manure raw material under stirring, a step of letting hot air of 50°C - 100°C blown into said mixture for drying the mixture, and a step of pulverizing the dried mixture.

[Claim 2] An organic fertilizer production device comprising a mixing tank equipped with a hopper for putting raw material into the tank and connected to a silo containing zeolite additive and a silo containing calcium carbonate additive, deodorization equipment connected to the mixing tank and a stirring tank connected to the mixing tank adjacently, being disposed therebetween, a heat collection device which is adjacently connected to said deodorization equipment, has an outlet adjacently connected to said mixing tank and said stirring tank, and also has a separate air inlet and an exhaust

*Numbers in the margin indicate pagination in the foreign text.

vent, and a cooling tank and an automatic weigh-in bag-making machine which are connected next to said stirring tank.

3. Detailed Explanation of the Invention

This invention pertains to a method for producing an organic fertilizer by treating farmed-poultry manure. Furthermore, it is an object of this invention to obtain an organic fertilizer while preventing environmental pollution. Thereby, the present invention characteristically provides a method for producing an organic fertilizer from farmed-poultry manure, a step of adding and mixing calcium carbonate into a raw material of poultry manure or the like while stirring for an amount based on the weight ratio to the manure raw material, a step of adding and mixing zeolite to this mixture while stirring for an amount based on the weight ratio to the manure raw material, a step of letting hot air of 50°C - 150°C blown into said mixture for drying the mixture, and a step of pulverizing the dried mixture. /490

In order to practice this invention, a silo 3 for a calcium carbonate additive and a silo 4 for a zeolite additive are connected to a mixing tank 2 equipped with a hopper 1 provided for pouring a raw material into the tank 2, a deodorization equipment 6 is connectively positioned between said mixing tank 2 and a stirring tank 5 which is adjacently connected to the mixing tank 2, and also adjacently connected to a heat collection device 7, clean hot-air vents 8, 8 of said heat collection device 7 are led to said mixing

tank and said stirring tank 5, and moreover, an air inlet 9 and an exhaust vent 10 for exhaust combustion gas are separately provided to said heat collection device 7, and a cooling tank and an automatic weigh-in bag-making machine are connectively and adjacently positioned to the stirring tank 12. Thus, while farmed-poultry manure is put in the mixing tank 2 from the hopper 1, calcium carbonate is added from the calcium carbonate silo 4 and mixed in under stirring. Furthermore, after zeolite is added to this mixture and mixed under stirring, the mixture is fed to the stirring tank 5. The odor produced during this operation is absorbed by the deodorization equipment 6, heated, burned, and decomposed in this device. The hot air produced by the decomposition of this odor is sent to the heat collection device 7 where the air coming in from the air inlet 9 is heated. The cleaned hot air therein is sent to the mixing tank and the stirring tank, acceleratingly dried, and discharged through the exhaust vent 10 as odorless clean exhaust gas.

The ratio of zeolite and calcium carbonate added to the mixing tank is 1% - 25% to the weight of manure raw material. However, since zeolite is an aqueous silicate of aluminum containing alkali metal, such as Na, K, Ca, etc., and alkali earth metal, having a unique crystal structure, the unique characteristics of gas absorption, ion exchanging and the like are provided. Therefore, as ammonium and water included in the poultry manure is absorbed by this gas absorbability, the organic fertilizer can have higher effectiveness

with improved sustainability of its effect and also functions as a soil improver. Moreover, since a material prepared by pulverizing limestone has a weak alkali property, calcium carbonate has the effectiveness of acid-neutralization and therefore provides an effect of calcific fertilizer. Subsequently, by adding these two kinds of materials, the moisture adjustor effect and fertilizer effectiveness can be improved, pH is neutralized, and a granulized product can be provided.

As described above, while the mixture containing zeolite and calcium carbonate is continuously stirred with hot air being blown into this mixture, the mixture becomes extremely dry within about 20 minutes of pouring the manure raw material. Since this product which has heat in itself is put in a third kiln and progressively pulverized under stirring, the temperature is lowered. The entire operation is proven to complete within about 45 minutes of pouring the manure raw material.

As in poultry manure processing in the prior art, a method of directly dispensing the product to the wilderness and fields, a direct drying method using crude oil or the like, a fermentation and drying method using aerobic bacteria, a method of adding limestone to utilize the heat generated by the chemical reaction with the moisture in manure, a method of heat-drying after adding sulfuric acid and blackstrap molasses, etc. were considered. However, various problems, such as high running cost, odors, ineffective fertilizer, costly

facility, and processes requiring days of operation, moisture adjustment of raw material, careful chemical handling, etc., were unavoidable.

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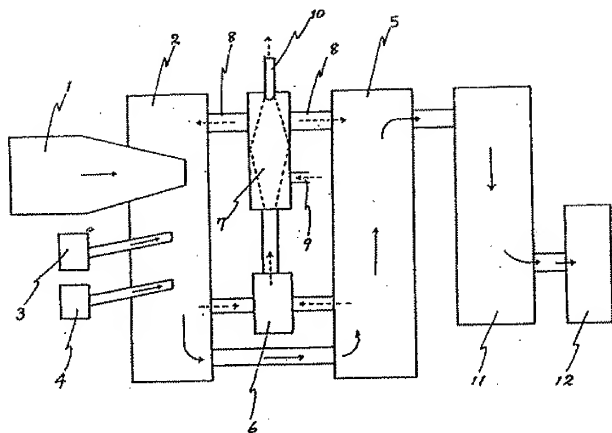
However, the present invention provides a production method for a pH-neutralized granulized fertilizer, which can be completed within a short process time, does not require moisture adjustment, has a high content ratio of three elements as fertilizer, and can use easily operable inexpensive equipment not requiring a large area for installation.

4. Brief Explanation of the Figure

The figure illustrates the arrangement of devices based on an embodiment of this invention.

1...Hopper; 2...Mixing tank; 3...Zeolite silo; 4...Calcium carbonate silo; 5...Stirring tank; 6...Deodorization equipment; 7...Heat collection device; 8, 8...Exhaust vent; 9...Air inlet; 10...Air exhaust; 11...Cooling tank; 12...Automatic weigh-in bag-making device

[Figure 1]



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(全 3 頁)

⑰ 家畜家禽糞の処理により有機質肥料を生産する方法ならびにその装置

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⑱ 特 願 昭55-186008

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㉑ 出 願 昭55(1980)12月27日

仙台市八木山本町二丁目17番地の20

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明 細 書

1 発明の名称： 家畜家禽糞の処理により有機質肥料を生産する方法並にその装置。

2 特許請求の範囲：

(1) 原料鶏糞にタンカルを原料糞重量比で添加し混合攪拌した後更にゼオライトを原料糞重量比で添加して混合攪拌しこれに50℃～150℃の熱風を吹き込み乾燥させて粉状化することを特徴とする家畜家禽糞の処理により有機質肥料を生産する方法。

(2) 原料を投入するホッパーを設けた混合槽にゼオライト用添加剤サイロとタンカル用添加剤サイロを接続し、混合槽とこれ

に接続した攪拌槽との間に両者に通じる脱臭装置を設け、これを熱回収装置に接続し、該熱回収装置の排出口は前記混合槽と攪拌槽に接続せしめ、別に空気取入口と排気口を設けると共に攪拌槽には冷却槽及び自動計量製袋装置を接続した構成を特徴とする家畜家禽糞の処理により有機質肥料を生産する装置。

3 発明の詳細な説明：

本発明は、家畜家禽糞を処理することによって有機質肥料を製造する方法並にその装置に係るもので、公害を防止すると同時に有機質の肥料を得ることを目的としたものであって、鶏糞等の原料にタンカルを原料糞重量比で添加し混合攪拌した後更にゼオライトを原

料重量比で添加して混合攪拌し、これに
 50℃〜150℃の熱風を吹き込んで乾燥さ
 せ粉状化して有機質肥料を得る方法を特徴と
 したものであり、実施に当つては、原料を投
 入するホッパー(1)を設けた混合槽(2)にタンカ
 ル用添加剤サイロ(3)及びゼオライト用添加剤
 サイロ(4)を接続し、混合槽(2)とこれに接続し
 た攪拌槽(5)との間に両者に通じる脱臭装置(6)
 を設け、これを熱回収装置(7)に接続し、該熱
 回収装置(7)の清浄な熱風の排出口(8)は前記
 混合槽(2)と攪拌槽(5)に直通せしめ、別に空
 気取入口(9)と燃焼後のガス排気口(10)を設けると
 共に攪拌槽(5)に接続して冷却槽(11)と自動計量製袋
 装置(12)を連結した構成を特徴としたものであ
 る。家禽家畜の糞を原料としてホッパー(1)か

Caなどのアルカリ金属やアルカリ土類金属
 を含むアルミニウムの含水強酸塩で熟得な結
 晶構造を有することから、ガス吸着やイオン
 交換能といった特異な性質を有し、このガス
 吸着性によつて鶏糞中に含まれるアンモニア
 及び水分を吸着させ、有機質肥料としての効
 果が高められ肥効の持続性も高められ更には
 土壌改良ともなるものである。又石灰石を粉
 砕したタンカルは弱アルカリの性質をもつこ
 とから土壌の酸性中和の効果を有するが、石
 灰性肥料として効果がある。従つてこの2種
 類を添加することによつて水分調整剤、肥料
 としての効果を向上し、P、Hを中性化し、
 製品を粉状化することができたものである。

以上の如くゼオライトとタンカルを添加し

ら混合槽(2)に投入し、同時にタンカル用添加
 剤サイロ(4)からタンカルを添加し混合しなが
 ら更にゼオライト用添加剤サイロからゼオラ
 イトを添加混合し、これを攪拌槽(5)に送り込
 む。その間に発生する悪臭は混合槽と攪拌槽
 から脱臭装置(6)に吸い上げられ脱臭装置内で
 加熱されて燃焼し悪臭が分解する。この悪臭
 が分解した後の熱風は熱回収装置(7)に送られ
 てここで空気取入口(9)からの空気が熱風回収
 装置内で加熱され、その清浄熱風は、混合槽
 と攪拌槽に送入されて乾燥促進し、無臭のク
 リーン排ガスは排気口(10)から排出される。

混合槽に添加されるゼオライト、タンカル
 の割合は原料糞の重量に対して1%から25
 %の範囲とするが、ゼオライトはNa、K、

熱風を吹き込みながら攪拌を進めることによ
 り原料糞投入後約20分後には乾燥化が進み
 、粉状化する。又製品自体が熱をもっている
 ので、第三キルンに入れて攪拌^粉状化を進める
 と共に、温度を下げる。この全工程は原料糞
 投入後約45分で終了することが実証された。

従来鶏糞処理方法としては、直接原野畑等
 に投棄するの外、溜池類による直接乾燥法、
 好気性菌を使用しての發酵乾燥法、生石灰を
 添加して糞中の水分との化学反応熱を利用す
 る法、硫酸及び硫酸銨を添加して加熱乾燥さ
 せる法等が考えられているが、ランニングコ
 ストが高い臭気の発生、肥料としての効果^低な
 らない、設備費大きい、処理日数を要する
 、原料の水分調整が必要、薬品の扱いに注意

を要するなど種々の欠点が免れなかつた。

置。

本発明方法によれば処理時間短く水分調整を必要とせず、肥料としての三要素の含有率が高く、取扱い容易で装置の設置費用も安く、広い面積も必要とせず、 $P \cdot H$ も中性化されて粉状化した製品を得る効果を得たものである。

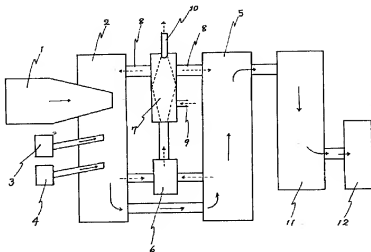
出 願 人 佐 藤 清 士
代 理 人 晶 山 正



4. 図面の簡単な説明：

図面は本発明の実施例を示したもので、装置の配置図である。

(1)→ホッパー、(2)→混合槽、(3)→ゼオライト用添加剤サイロ、(4)→タンカル用添加剤サイロ、(5)→攪拌槽、(6)→脱臭装置、(7)→熱回収装置、(8)→排出口、(9)→空気取入口、(10)→排気口、(11)→冷却槽、(12)→自動計量包装装置



DERWENT-ACC-NO: 1982-69333E**DERWENT-WEEK:** 198233*COPYRIGHT 2008 DERWENT INFORMATION LTD*

TITLE: Organic fertiliser prepn. from animal and poultry excrement by mixing with calcium carbonate and zeolite then blowing dry by hot air

PATENT-ASSIGNEE: SATO K[SATOI]**PATENT-FAMILY:**

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JP 57111292 A	July 10, 1982	JA

APPLICATION-DATA:

PUB-NO	APPL- DESCRIPTOR	APPL-NO	APPL-DATE
JP 57111292A	N/A	1980JP- 186008	December 27, 1980

INT-CL-CURRENT:

TYPE	IPC DATE
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CIPS	C05F3/06 20060101

ABSTRACTED-PUB-NO: JP 57111292 A

BASIC-ABSTRACT:

Calcium carbonate is added to excrements of domestic animals and domestic poultry, followed by stirring; then adding zeolite, followed by more stirring; and then blowing hot air (50-150 deg.C) to this mixt. to dry and powderise the mixt.. An apparatus for producing organic fertiliser comprises a silo connected to add CaCO_3 and a silo to add zeolite to a mixing tank equipped with hopper. Between the mixing tank and stirring tank a deodorising appts. is provided which is connected with heat-recovering appts. The outlets of the heat-recovering appts. are connected with the mixing tank and the stirring tank. An inlet for air and outlet for combusted gas is provided at the heat-recovering appts. connecting the stirring tank with the cooling tank which is connected with an automatic weighing and packing appts..

Bad smell from the mixing tank and the stirring tank is sucked in by the deodorising appts., where the bad smell is heated and combusted to decompose the bad smell.

Organic fertiliser can be prepd. quickly without need of water content adjustment. The obtd. prod. is easy in handling. The method does not require a large area.

TITLE-TERMS: ORGANIC FERTILISER PREPARATION
ANIMAL POULTRY EXCREMENT MIX CALCIUM
CARBONATE ZEOLITE BLOW DRY HOT AIR

DERWENT-CLASS: C04 D15

CPI-CODES: C04-B04B; C04-D02; C05-A01B; C12-N10; D04-B11; D05-A03;

CHEMICAL-CODES: Chemical Indexing M1 *01*
Fragmentation Code M423 M431 M740
M782 P113 Q434 V600 V633

Chemical Indexing M1 *03*
Fragmentation Code M423 M431 M740
M782 P112 Q434 V793

Chemical Indexing M2 *02*
Fragmentation Code A220 A940 C106
C108 C530 C730 C801 C802 C803
C805 C807 M411 M431 M740 M782
P112 Q434

UNLINKED-DERWENT-REGISTRY-NUMBERS: ; 1278U